

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A polymerization process comprising:
achieving a desired polymerization temperature of a reaction mixture in a
reactor;
dosing at least one peroxide over a period of time to the reaction mixture at the
desired polymerization temperature, the peroxide having wherein at least one peroxide, with a
half life in between 1 hour and 0.001 hour at the desired polymerization temperature, at the
moment of dosing, is dosed to the reaction mixture at the polymerization temperature and
wherein at least during part of the period in which the peroxide is dosed;
i) the cooling means of the reactor are kept at essentially maximum cooling
capacity; and
ii) the amount of initiator that is dosed is actively controlled by a temperature
controller such that the temperature of the reaction mixture is achieved and maintained within
0.3°C of the desired polymerization temperature, is achieved and maintained within 0.3°C of
said polymerization temperature.
2. (Currently Amended) The polymerization process of claim 1 wherein the
polymerization temperature temperature of the reaction mixture is maintained within 0.2°C;
preferably within 0.1°C, of said the desired polymerization temperature.
3. (Currently Amended) The polymerization process of claim 1 wherein the
temperature controller controls the temperature of the reaction mixture by monitoring the
temperature of the reaction mixture and/or the pressure of the any gas phase in the
polymerization reactor during the polymerization reaction, while at the same time adjusting
the dosing rate of the initiator to the reaction mixture.

4. (Currently Amended) The polymerization process of claim 1 wherein the polymer obtained has a K-value within 0.3 units of the desired K-value, ~~preferably within 0.2 units of the desired K-value.~~

5. (Previously Presented) The polymerization process of claim 1 wherein the temperature is controlled by a temperature controller selected from the group consisting of a PID controller, a PI controller, a PD controller, and a fuzzy logic controller.

6. (Currently Amended) A polymerization process according to claim 5 wherein the controller is a PID controller using a proportional band, ~~characterized in that~~ and the proportional band of the PID controller is in the range of from 0.6% to 2.5%.

7. (Currently Amended) A polymerization process according to claim 6 wherein ~~the~~ temperature sensing means are linked to the proportional and integral input signals of the PID controller and wherein reactor pressure sensing means are linked to ~~the~~ a derivative function of the PID controller during at least part of the period in which the peroxide is dosed.

8. (Previously Presented) A polymerization process according to claim 1 wherein vinyl chloride is polymerized, optionally together with other monomers.

9. (Previously Presented) A polymerization process according to claim 1 wherein the polymerization process is a suspension polymerization process.

10. (New) The polymerization process of claim 1, wherein the temperature of the reaction mixture is maintained within 0.1°C of the desired polymerization temperature.

11. (New) The polymerization process of claim 1, wherein the polymer obtained has a K-value within 0.2 units of the desired K-value.